Shorelines

Coastal Coordination

Shorelines 2000

Winter

2000

On Shore

This Issue

LM
Lake Michigan

Protecting the Great Lakes Basin

By Sylvia R. Wilcox

On October 19, 1999, the International Joint Commission (IJC) held a public hearing in Gary's Marquette Park to gather comments on the PROTECTION OF THE WATERS OF THE GREAT LAKES INTERIM REPORT, a study requested by the Governments of Canada and the United States to address Great Lakes water diversion and consumptive use. The IJC held other meetings in Ottawa, Washington, D.C., and ten other cities in the Great Lakes Basin.

The IJC, (Commission mixte internationale for our French speaking readers), was established in 1909 to consider protections for the Great Lakes Basin. Under Article IX of the Boundary Waters Treaty of 1909, the IJC is authorized to consider the uses on Great Lakes waters bordering the United States and Canada. For this reason, the Commission includes members from both the United States and Canada, with Susan Bayh serving as a US Commissioner. The Great Lakes Water Quality Agreement sets objectives for water quality in the Great Lakes while compliance with the 1909 Boundary Waters Treaty is required in setting levels and flows of the Great Lakes.

In order to study Basin uses, the IJC created an international study team. The team includes seven US and seven Canadian members with US representatives from the US Army Corps of Engineers, the Department of Interior, US Geological Survey, and the Great Lakes Commission. Canadian members include representatives from the Ontario Ministry of Natural Resources, the Environnement et développement durable Itée and Environment Canada. The IJC study team was asked to study and provide recommendations on several issues that include:

- existing and potential consumptive uses of water;
- existing and potential diversion of water in and out of the transboundary basins, including withdrawals of water for export;
- the cumulative effects of existing and potential diversions and removals of water, including removals in bulk for export;
- the current laws and policies as may affect the sustainability of the water resources in boundary and transboundary basins.

Commissioner Bayh facilitated the Gary public hearing. Both state officials and the public commented on the interim recommendations. Commissioner Bayh questioned officials from Indiana, Illinois, Pennsylvania, and Ohio with a focus on understanding impacts of diversions on the basin waters. Commission members expressed a variety of concerns, including: consistency in ruling on requests for diversions (For example, Akron, Ohio's request for a diversion was granted, while Lowell, Indiana's 1990 request for diversion was denied.); and the status of groundwater availability and lake level changes. The Commissioners also sought insight on state perceptions of the greatest local, national, and international "threats" to the Great Lakes basin; as well as, opinions regarding Michigan's veto power of diversion decisions.

Water Uses

The study team to determine the types of consumptive uses in the Great Lakes Basin did preliminary studies. These studies provide a breakdown of uses in Figure 1. As shown, approximately 5% of Great Lakes water is consumed with 95% of water returned to the basin. The consumptive uses predominately include irrigation, public water supply and industry. The type of withdrawal use dictates the amount of water consumed. For example, waters used for irrigation are approximately 80% consumed, while waters used for thermoelectric power consume less than 1% of the waters.

Current and Potential Water Diversions

A diversion is the transfer of water from one watershed to another. Three major diversions occur in the Great Lakes Basin - the Chicago, the Longlac and the Ogoki diversions. The Chicago Diversion at Lake Michigan serves as the largest diversion out of the basin while the Longlac and Ogoki diversions flow into Lake Superior. Intra basin diversions in the Wellan and Erie Canals also are seen. These major diversions provide an average influx of water into the Basin.

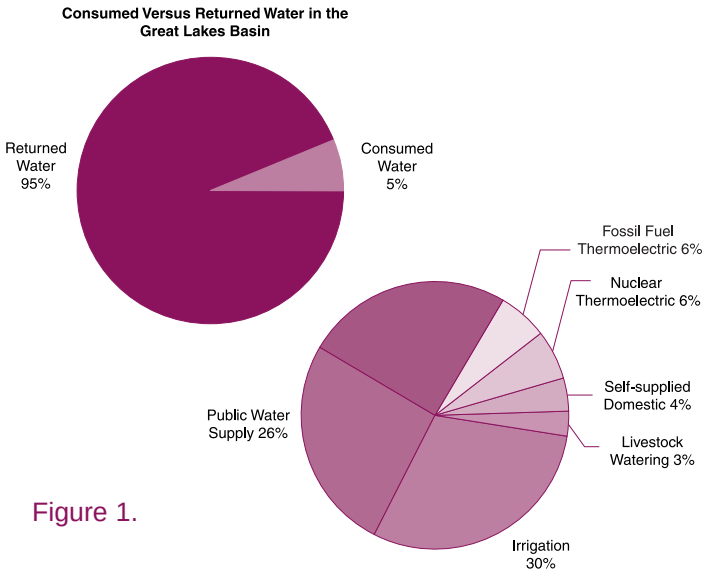


Figure 1.

In the 1800s, various diversions were allowed in New York (Erie Canal) and Wisconsin (Portage Canal). More recently, various municipal diversions have been allowed: London, Ontario and Detroit, Michigan have diverted water from Lake Huron for their municipalities. Pleasant Prairie, Wisconsin and Akron, Ohio are granted the authority to divert waters from the Basin with the agreement to return equivalent volumes back to the Basin. One of the purposes of the IJC study is to provide consistent criteria and guidelines for allowing diversions from the Basin.

Potential diversions are believed to be minimal by both the United States and Canada, because no current proposal exists for Basin diversion. Nor do economic, social or environmental considerations support an increase in diversions of water from the Basin. The IJC's interim recommendations include a moratorium on groundwater and surface water bulk sales or removals from the Basin. Consumptive uses are also to be considered with caution pending the IJC final recommendations.

Cumulative Effects

Although the cause of effects on the Basin is subject to individual interpretation, the IJC has found the largest effects on lakes occurred from work done in the channels of the St. Clair and Detroit Rivers causing lower lake levels in Lake Michigan and Huron. Weather changes and climate also predominate in affecting Basin water levels. Yearly lake level fluctuation supports the need for land-use and shoreline management programs to prevent flooding and erosion, and several programs have been established throughout the states in response to this need.

The IJC has decided to err on the side of caution when evaluating and assessing impacts from Basin activity. Therefore, the possibility of harmful effects will likely be a consideration at the forefront of the IJC final recommendations.

The Interim Report can be obtained from the Commission's Web Site at www.ijc.org. The IJC plans to submit its final report and recommendations by February 10, 2000.

Did you know that a tanker's request to export waters from Lake Superior sparked the United States and Canada to study water uses along the United States and Canadian borders? While you might believe that the activity of one tanker would cause minimal removal of water from the lake, the governments of the United States and Canada became concerned that this activity would create a precedent for Great Lakes withdrawal. Further concerns for the cumulative effects of other similarly minor proposals for diverting, using and removing Great Lakes waters led the governments to refer the issue to the International Joint Commission.

Millennia before the year 2000:

Part I. Geological History

Natural features of the southern basin of Lake Michigan basin are keys to why industries and communities have prospered in Northwest Indiana following European contact. As we enter the Second Millenium since the birth of Christ, we are reminded that humans have lived in Indiana for at least 11,000 years. Just as Lake Michigan is used today as a major transportation route, a drinking water supply, a recreation area, an industrial water supply, and a food source, so our first inhabitants used it.

Following is the first of a three-part series high-lighting the physical and cultural events marking just the past few millennia in what is today Northwest Indiana. The first segment looks at recent geology. The second looks

to flora and fauna. The third offers a glimpse of the Native American populations in Northwest Indiana.

The geology and soils of the Lake Michigan drainage basin were created during the late Pleistocene and Holocene Epochs. "During the Pleistocene Epoch, the continental glaciers repeatedly advanced over the Great Lakes region from the north. The first glacier began to advance more than a million years ago. As they inched forward, the glaciers, up to 6,500 feet (2,000 m) thick, scoured the surface of the earth, leveled hills, and altered forever the previous ecosystem."[1]

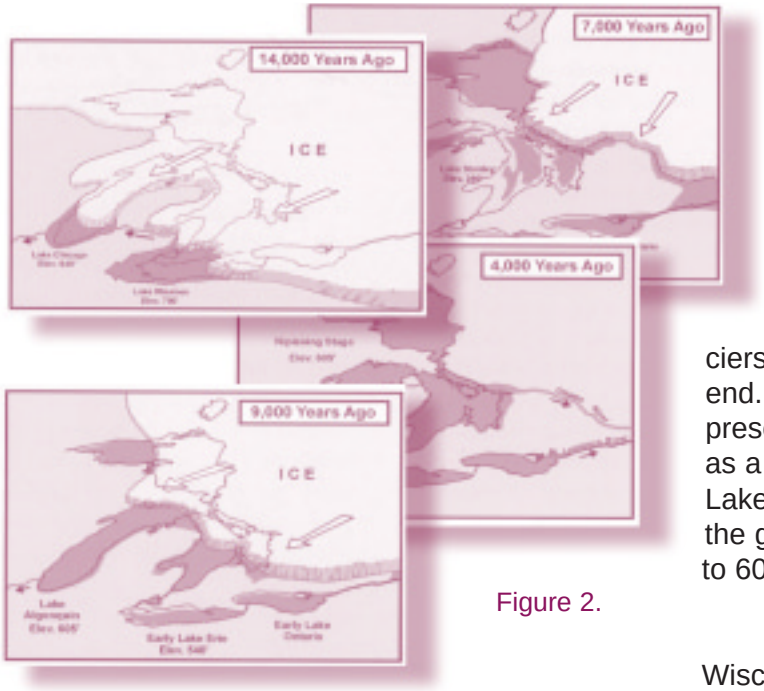


Figure 2.

U.S. Army Corps of Engineers and Great Lakes Commission

The landscapes created by the advancing and retreating glaciers are called moraines. Moraines are places where knobby hills and ridges are mixed with kettle-holes where blocks of ice melted into lakes and marshes.[2] The Valparaiso Moraine is the oldest end moraine in the Lake Michigan Region. As ancestral Lake Michigan advanced across the region, the Valparaiso Moraine formed along the limits of the glacial ice. The crest of the moraine forms most of the drainage divide between the Kankakee River Basin to the south and the Lake Michigan Region to the north.[3] The Glenwood Beach is a relict beach that occurs on the lakeward side of the Valparaiso Moraine. Although the beach complex is a discontinuous ridge, Glenwood Beach is the highest dune and beach complex in the Lake Michigan Region. Toleston Beach is closest to Lake Michigan; and therefore, the youngest dune-beach complex in the region.

The late Wisconsinan glaciation advance began about 110,000 years ago. The Great Lakes as we know them did not exist. 20,000 years ago, the massive lobes of glacial ice, sometimes reaching a mile or so in height, reached its maximum southern extent spreading from southern Canada extending as far as central Ohio, Indiana, and Illinois. This was the latest climatic change on the Great Lakes region that had, during the previous two million years, already experienced a number of advances and retreats of glacial ice. The Great Lakes were created by glaciers scouring out ancient pre-Pleistocene river valleys. During times of glacial retreat, buried blocks of ice would become lakes and bogs, and raging meltwater flows would carve new river courses.[4]

Responding to warmer temperatures and perhaps lower precipitation, the Wisconsinan glaciers began a slow, vacillating retreat about 18,000 years ago.[5] As Lake Michigan formed by the advance and retreat of glaciers, dunes and beaches formed at its southern end. A large ice sheet extended just south of the present Lake Michigan basin. The ice sheet acted as a dam helping to form what became Ancient Lake Chicago, a reservoir to hold melt water from the glacier. During this stage, the lake level was 50 to 60 feet higher than it is today.

Figure 2 illustrates the movement of the late Wisconsinan glacier. As the glacier retreated northward, fluctuating lake levels in combination with wind and wave actions contributed to the formation of the physiography of the coastal area.

About 10,000 years ago, the lake, 100 feet lower, was a five-mile walk from today's shoreline. Most of the ice fields left the Great Lakes region about 7,000 to 9,000 years ago. Only 5,500 years ago, the lake was 23 feet higher than today, drowning the areas that are now Gary, East Chicago, northern Hammond, Miller, Ogden Dunes, Dune Acres, Beverly Shores, and northern Michigan City. As the glacier retreated north, Lake Chicago swelled and retreated, forming the dune complexes still present from US 30 north, to Ridge Road, to US 12 and the present day shoreline. The dunes on the Indiana shoreline currently visible are estimated to be 2,000 to 3,000 years old.

The pockets of prairies, sand dunes, and marshes found now in the Lake Michigan basin are remnants of vast expanses of these natural features. Prairies as far as the eye could see, marshes averaging half a mile in width, and towering dunes close to 200 feet tall dominated northern Lake, Porter, and LaPorte Counties. The land around the Great Lakes is still rebounding, rising from the weight placed upon it by the ice thousands of years ago.

[1] United States Environmental Protection Agency and Government of Canada, The Great Lakes An Environmental Atlas and Resource Book , (Third Edition, 1995), p. 7.

[2] Chicago Region Biodiversity Council, Chicago Wilderness, An Atlas of Biodiversity, (Chicago Region Biodiversity Council), p. 8.

[3] Indiana Dept. of Natural Resources, Water Resources Availability In The Lake Michigan Region, Indiana, (1994), p. 31.

[4] Harding, James H. Amphibians and Reptiles of the Great Lakes Region. Ann Arbor: The University of Michigan Press, 1997. p.22

[5] Ibid. p. 24.

"Main Street" reinvented near Chesterton

by Jennifer Kane

The landscape of Northwest Indiana today bears little resemblance to the natural landscape of pre-settlement times. Until the early 1800s, most of Indiana's Lake Michigan watershed was covered by a vast marsh and wooded swamp. Prairie grasses and oak savannas, with upland hardwood forests characterized many areas. In the last 100 years, Indiana's landscape has changed dramatically.

Prairie restoration, Coffee Creek Center.

Today, we spend more time in our car commuting to work, running errands, and chauffeuring. We drive for every need. Decentralization of our metropolitan areas, or what is sometimes referred to as "urban sprawl," has been a dominant social trend of the past half-century.

The development trend has been automobile focused; however, Lake Erie Land Company (LELC), the real estate development arm of Nipsco Industries, Inc., bucks the trend with development of Coffee Creek Center ("Coffee Creek") near

Coffee Creek bank restoration

Chesterton. The development plan "puts pedestrians first," and focuses on recapturing the street as a part of the public realm, looking to neighborhoods of years past for inspiration. No home will be more than a short walk from the community center. This approach may lower the number of necessary car trips and lead to more compact land use.

LELC's development "philosophy" is not a new concept. Ebenezer Howard, an English reformer born in 1850, devised a similar plan. Howard proposed to move dwellers of a "crowded London to the countryside" in what he penned "Garden Cities of Tomorrow." Howard described his garden cities as *"independent towns, of 30,000 residents at most, living in compact communities that included factories, marketplaces, and farms, surrounded by a belt of undeveloped land to contain the size of each settlement, and provide residents with accessible places for recreation and fresh air. The garden city would blend the best of town and country, allowing residents to experience human interaction of urban areas in a rural environment."*

Indiana Route 49 borders Coffee Creek project on the west with Indiana Toll Road on the south. More than 640 acres that encompass Coffee Creek Center will include a mix of residential, commercial and retail areas, together with more than 200 acres of prairie, woodland, wetland and stream restoration along the Coffee Creek corridor and throughout the site. According to LELC, priority is placed upon the proper integration of healthy ecosystems with urban life.

Band Restoration, Coffee Creek

J. F. New & Associates, Inc. is the ecological consultant for the Coffee Creek Project. Rob Wolfe, Vice President of J. F. New, said Coffee Creek "started out as a typical subdivision in planning," but has evolved "literally into a world class conservation development." Restoration efforts are currently being undertaken in flood plains, meadows and remnant prairie areas. These preserved natural areas are designed to serve as focal points of the community. He said the 150-acre Coffee Creek riparian corridor will be restored and set aside as a park, which significantly differs from typical housing developments that place homes all along the creek. Bike and walking trails will wind their way through preserved stands of trees and rehabilitated wetlands.

J. F. New's ecologists, biologists, botanists, landscape designers and engineers prepare the plans for Coffee Creek's quality wetland restoration and mitigation projects. " Literally, we make in-field changes to the [development] plan because of natural habitat," said Wolfe. Nicole Kalkbrenner, Botanist and Project Manager, said " 200,000 prairie grass plugs were planted in the intensely degraded farm field." Kalkbrenner explained that tree thinning and removal of exotic plant species has allowed "light into the ground floor to encourage the growth of native species." With restoration and prescribed burning, native orchids and other rare species have been sighted.

The architectural firm, McDonough+Partners is the project's overall land planning consultant. William McDounough sees Coffee Creek as " the first step toward creating a green world with connecting gray zones." *Time* magazine featured McDounough and the Coffee Creek development in the February 15, 1999 issue.

Wolfe indicated that long-term management plans for the Coffee Creek area will be the responsibility of the newly established Coffee Creek Watershed Conservancy (CCWC). CCWC includes memberships from Save the Dunes Council, Izaak Walton League (Porter County Chapter), Shirley Heinze Environmental Fund,

Northwest Indiana Steelheaders, and the Coffee Creek Life Center (a wildlife rehabilitation group). All who live within the development will be asked to pay a fee similar to a homeowner's association charge. Katie Rizer, LELC's Director of Fun, said "70% of the environmental trust will be funded commercially with the remainder funded through the residential fees. The money is used not only to run the organization, but also to fund conservation easements which will directly protect the long-term preservation and maintenance of set-aside natural areas."

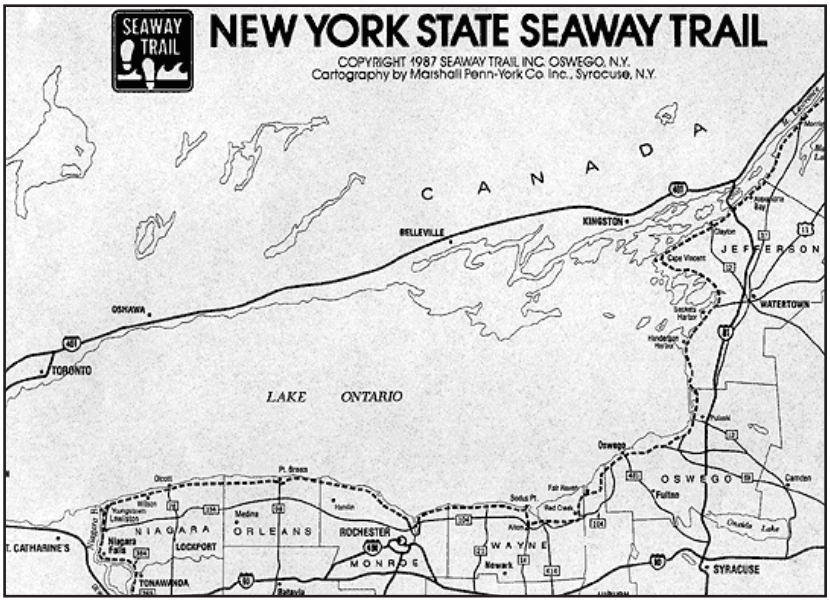
Rizer explained starter homes, mid-level, and town homes will face the boulevard, and not SR 49, to enhance the sense of community. Future development plans also include areas for a conference center, hotel, school, and village. Details of the Coffee Creek restoration and project update will appear in the summer issue of SHORELINES. For more information on the project, see: http://www.coffeecreekcenter.com/.

Around The Great Lakes: Spotlight On New York

In October 1999, New York hosted a meeting along Lake Ontario for Great Lakes Coastal Programs to exchange information and ideas. The City of Rochester discussed state and city revitalization efforts including developing residential housing and amenities in close proximity to downtown to attract residents after business hours, developing trails, parks, and recreational opportunities associated with the Erie Canal. The city and state are also cooperating to create museums and art centers that document the history of Rochester as a waterfront city. New York also highlighted their New York State Seaway Trail as one of their projects that capitalize on Great Lakes tourism. Information about this program can be found at: www.seawaytrail.com/main_frames.htm

Representatives for the New York State Seaway Trail presented their approach to developing the trail and promoting the many communities along their Great Lakes corridor. The mission of the New York Seaway Trail is "to increase tourism revenues and to enhance the economic well-being and quality of life in New York's Seaway Trail corridor by managing and marketing it as a leading scenic byway." New York approached this concept by creating their Seaway Trail with both a non-profit organization and the Seaway Trail Foundation to provide marketing and product creation. In addition, each county along the corridor developed a local action plan and inventory of tourism resources for their portion of the corridor. Eight resource themes were identified as: coastal recreation, natural resources, history of the coast, peoples of the coast, coastal agriculture, international coastline, water-related industry, and commercial shipping. For example, several counties along the Seaway Trail collaborated to promote their agricultural communities as destinations for tourists interested in historic farms and museums, wineries, farm festivals, and county fairs. The New York Seaway Trail has created several tourism guides such as the "Seaway Trail Wildguide to Natural History" and "The Nautical Seaway Trail Chartbook and Waterfront Guide".

New York also provided a tour of Fairport, a community along the Erie Canal, which has revitalized their Village and its connection to Great Lakes tourism. Fairport Village planners pointed out that 15 years ago Fairport was neglected, dirty, with a canal considered a liability. The Village began their revitalization by recognizing the canal as a resource that could diversify their economy. In addition to redeveloping canal front property, Fairport added an adjoining park and other green areas for community events, new boat docking, utilities, canoe and kayak rentals, a sanitary



pump out, and a trail to the canal. The Village also accepted an historic trolley way station, Canal-era railroad building, and incorporated historic architectural styles into their building codes. Planners used several revenue sources including urban renewal programs, small community development funds, contributions from the Municipal Electric Department, private contributions, property tax general revenue of the village, merchants, and lobbying the state department of transportation for canal wall repairs.

Fairport continues to focus on revitalization with plans to provide pedestrian connections between the commercial district and the canal, to integrate the canal path with other local and regional trail networks, and to develop services near the canal suitable for all users including boaters, bikers, and pedestrians.

The Great Lakes region is made up of areas that are distinctive in their history, natural resources, and economy; however, despite the differences, states of the Great Lakes region can find many similarities. New York faces many of the same challenges and has many of the same types of resources as those in Northwest Indiana. This spotlight on New York's efforts to revitalize urban waterfronts, to promote and protect natural assets associated with the Great Lakes, and to use a regional approach to planning for a sustainable environment may initiate discussion among those involved in similar efforts in Northwest Indiana.

INDIANA DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER
402 WEST WASHINGTON STREET, ROOM W264
INDIANAPOLIS, INDIANA 46204-2743

BULK RATE
U.S. POSTAGE
PAID
INDIANAPOLIS, IN
Permit #7374

INDIANA DEPARTMENT OF NATURAL RESOURCES

The Lake Michigan Coastal Coordination Program is an effort by the State of Indiana to improve communications and cooperation among the agencies who participate in activities in the Lake Michigan coastal region.
See http://www.dnr.state.in.us/lakemich/index.htm

Managing Editor — Jennifer Kane

Editors — Laurie Rounds, Stephen Lucas

Graphics Designer — Jeffrey S. Foreman

Indiana Shorelines for Coastal Coordination is a quarterly publication of the Lake Michigan Coastal Coordination Program. Please direct questions, comments, or up-coming event information to:
Jennifer Kane, (317) 232-0156;
Coastal@dnr.state.in.us